

§5. Archival Study on Development of Heliotron Devices

Mizuuchi, T. (IAE, Kyoto Univ.),
Ijiri, Y. (IAE, Kyoto Univ.),
Hanaoka, S., Matsuoka, K.

"Fusion Science Archives" of National Institute for Fusion Science has promoted archival activities about the nuclear fusion studies that have been performed at universities in our country.

This archival study is focused on the fusion oriented high temperature plasma experimental devices developed and constructed in universities, especially on the series of Heliotron devices, which have been originally proposed and developed in Kyoto University by the late professor emeritus of Kyoto University, Koji UO [1].

After the proof-of-principle experiment in Heliotron E (Kyoto University), the Helical-Heliotron concept is now in its parameter expansion phase and a lot of remarkable results have been obtained through the LHD project in National Institute for Fusion Science (NIFS). On the other hand, in Kyoto University, a new generation of the heliotron concept, Helical-Axis Heliotron [2], was proposed by the Kyoto group and has been experimentally examined its basic idea through the Heliotron J project in Laboratory for Complex Energy Processes, Institute of Advanced Energy (IAE), Kyoto University under the auspices of the NIFS Collaborative Research Program.

The aim of the archival study is comprehensive and systematic collection of the research materials on each heliotron device. The materials about technical notes in R&D phase of machine construction and of control sequences are also the targets.

By the collaboration with "Fusion Science Archives" since 2007, collection of scientific materials about heliotrons is in progress. By 2008, a present situation of a series of heliotron devices has been investigated, and some documents of each device were confirmed. In 2009, the

minutes of technical meetings with the manufacturer in each device and the records of the malfunction in operation and countermeasure are also added in the archive.

It is an important factor in the archival activities to select a proper safekeeping method and to maintain a safekeeping place of the materials. Recently, "Fusion Science Archives" has proposed to copy large size drawings to microfilm to reduce a safekeeping space. Although a special device is necessary to read documents in a microfilm, it is possible to keep it very compactly in a small space.

According to this suggestion, we started to make a microfilm collection of large size drawings for the Heliotron E device and its relating equipments. As a first step, a part of drawings for the Heliotron E device and a high-speed vertical type motor-generator, which is a heart of the power supply of Heliotron E device and also a pioneering one in the history of nuclear fusion study in Japan, was copied to a microfilm. Parallel to this activity, it is necessary to compile the catalogue of microfilms into a database in next step.

[1] K. Uo, at Kakuyugo-Kondankai (May, 1958).

[2] M. Wakatani, et al., 17th IAEA Fusion Energy Conf. (Yokohama, 1998) IAEA-CN-69/EX2/5.

格納No.	図面NO.	格納No.	図面NO.	格納No.	図面NO.	格納No.	図面NO.
1-B	10P060-898	W-1	10R178-032	MG-2	10Q087-683	3-B	1-2D005
	10P063-912		10Q117-200		10Q087-844		1-0010
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2-B	1-2D004	MG-1	10P050-240		10Q122-430		1-0011
	10Q097-134		10P063-232		10R177-908		1-0001
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	10R177-880		10P057-133		10S226-637		2P00691
	10Q126-026	KO-1	10P073-155		10Q122-429		325-2310692
	10Q107-984		10P073-153		10Q117-063		33110065
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	10Q112-476		10P063-960	1-B	1-0130		
4-A	10P073-163		10R155-876		1-1D032		
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5-A	1-2D001		10Q117-096	3-B	1-1D018		
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	1-2D008		10P073-154		1-1D016		
	1-2D010		10P078-196		1-1D013		
	1-2D012	MG-2	10S205-610		1-1D012		
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	1-1D009		10P059-948		1-1D021		
	1-1D010		10P063-260		1-1D005		
	1-0407		10P063-261		1-1D003		

Table 1. List of Drawings